In the Claims:

Please amend claims 1-7, 10 and 12 as follows:

1. (Amended) A plurality of single-stranded oligonucleotide DNA primers for simultaneous amplification of [a] multiple target DNA sequences [capable of use] under a single set of reaction conditions in a multiplex polymerase chain reaction (PCR), said primers having [the structure 5'-XY-3'] a 5' domain, X, and a 3' domain, Y, wherein

a) said 5'-X domains each comprise[s] a common sequence that does not hybridize to said multiple target sequences;

b) the melting temperature of a hybrid between X and its complement in the absence of other sequences is greater than about 60°C; [and]

c) said 3'-Y domains each comprise[s] a unique sequence contained within or flanking one of said multiple target sequences or its complement; and

d) the melting temperature of a hybrid between at least one of said 3'-Y domains and its complement, in the absence of other sequences, is different from the melting temperature of a hybrid between at least one other 3'-Y domain and its complement present in said multiplex PCR.

2. (Amended) The primers [of] according to claim 1, wherein X comprises the sequence 5'-GCGGTCCCAAAAGGGTCAGT-3' (SEQ ID NO:64).

3. (Amended) The primers [of] according to claim 1, wherein X and Y each comprise from 17 to 20 bases.

4. (Amended) The primers [of] according to claim 1, wherein the melting temperature of a hybrid formed between each of said

primers and its complement in a solution of 0.5M NaCl is at least 72°C.

5. (Amended) [An] DNA primers for simultaneous amplification of [a] multiple target DNA sequences under a single set of reaction conditions in a multiplex polymerase chain reaction (PCR), wherein said primers consist[s] of the sequence 5'-GCGGTCCCAAAAGGGTCAGT (SEQ ID NO:64) (Y)-3', wherein an individual Y comprises a unique sequence contained within or flanking one of said multiple target sequences or its complement.

6. (Amended) A method for simultaneous amplification of multiple DNA target sequences present in a DNA sample, [which comprises] said method comprising:

a) contacting said DNA sample, in a single reaction mixture, with a multiplicity of paired oligonucleotide primers having the structure 5'-XY-3', wherein

(i) each X comprises the sequence 5'-GCGGTCCCAAAAGGGTCAGT-3' (SEQ ID NO:64), and

(ii) each Y comprises a unique sequence contained within or flanking one of said multiple target sequences or its complement; and

b) performing multiple cycles of melting, reannealing, and DNA synthesis under identical reaction conditions and cycling parameters.

7. (Amended) A method for simultaneously detecting the presence of multiple defined target DNA sequences in a DNA sample, which comprises the steps of:

a) simultaneously contacting said DNA sample, in a single reaction mixture, with a multiplicity of oligonucleotide pairs, each of said pairs consisting of a first and second oligonucleotide primer, wherein

(i) said first primer of each pair has the structure 5'-XY-3', wherein each X comprises the sequence 5'-GCGGTCCCAAAAGGGTCAGT-3' (SEQ ID NO:64) and each Y comprises a unique sequence contained within [the] one of said multiple target sequences or its complement, and

(ii) said second primer of each pair has the structure 5'-XY-3', wherein each X comprises the sequence 5'-GCGGTCCCAAAAGGGTCAGT-3' (SEQ ID NO:64), and each Y comprises a unique sequence flanking [the] one of said multiple target sequences or its complement;

b) performing multiple cycles of melting, reannealing, and DNA synthesis under identical reaction conditions and cycling parameters to form amplification products [of DNA samples] for each of said multiple defined target DNA sequences primed with said oligonucleotides; and

c) detecting the amplification products.

10. (Amended) A method for high-throughput genetic screening to simultaneously detect the presence of multiple defined target [DNA] sequences in DNA samples obtained from [a multiplicity of] one or more individuals, said method comprising the steps of:

a) providing a sample of DNA from [each of] said individual(s);

b) simultaneously contacting [each of] said DNA sample(s) [obtained in a)] with a multiplicity of oligonucleotide pairs, each of said pairs consisting of a first and second oligonucleotide primer, wherein

(i) said first primer of each pair has the structure 5'-XY-3', wherein each X comprises the sequence 5'-GCGGTCCCAAAAGGGTCAGT-3' (SEQ ID NO:64) and each Y comprises a unique sequence contained within [the] one of said multiple target sequences or its

complement, and

(ii) said second primer of each pair has the structure 5'-XY-3', wherein each X comprises the sequence 5'-GCGGTCCCAAAAGGGTCAGT-3' (SEQ ID NO:64), and each Y comprises a unique sequence flanking [the] one of said multiple target sequences or its complement;

c) [performing] subjecting said sample to multiple cycles of melting, reannealing, and DNA synthesis wherein each of said cycles is conducted under the same reaction conditions and cycling parameters to form amplification products [of DNA samples] for each of said multiple defined target DNA sequences primed with said oligonucleotides; and

d) detecting the amplification products.

In claim 12, please delete "9" and insert --10--, and delete "comprise" and insert --comprises--.

Please add new claims 13-18 as follows:

--13. (New) A method for simultaneously detecting multiple defined target sequences in a DNA sample, said method comprising the steps of:

a) simultaneously contacting said sample with a plurality of oligonucleotide pairs, each of said pairs consisting of a first and a second primer having the structure 5'-XY-3', wherein

(i) X in said first primer of each pair comprises the sequence 5'-GCGGTCCCAAAAGGGTCAGT-3' (SEQ ID NO:64) and Y comprises a unique sequence contained within [the] one of said multiple target sequences or its complement, and

(ii) said second primer of each pair has the structure 5'-XY-3', wherein each X comprises the

sequence 5'-GCGGTCCCAAAAGGGTCAGT-3' (SEQ ID NO:64), and each Y comprises a unique sequence flanking [the] one of said multiple target sequences or its complement;

c) subjecting said sample to multiple cycles of melting, reannealing, and DNA synthesis wherein each of said cycles is conducted under the same reaction conditions and cycling parameters to form amplification products for each of said multiple defined target DNA sequences primed with said oligonucleotides; and

d) detecting the amplification products.--

--14. (New) A method of screening to simultaneously detect multiple target sequences of interest in DNA, the method comprising:

a) obtaining a sample of DNA to be screened for said multiple target sequences of interest,

b) contacting said sample with a plurality of oligonucleotide primer pairs having the structure 5'-XY-3' under multiplex polymerase chain reaction conditions wherein coamplification of said multiple target sequences occurs in one or more cycles of identical melting, annealing and extending temperatures and times, wherein

each 5'- X domain comprises a common oligonucleotide that is neither complementary to nor specific for said multiple target sequences; and

each 3'-Y domain comprises a unique oligonucleotide, each oligonucleotide complementary to and specific for one of said multiple target sequences of interest suspected to be present in said DNA; and

c) detecting the amplification products.--

--15. (New) A method according to claim 14, wherein said multiple target sequences of interest are located within different regions of a gene present in said DNA.--

--16. (New) A method according to claim 14, wherein said multiple target sequences of interest are located within multiple genes present in said DNA.--

--17. (New) A plurality of amplified target sequences of interest detected according to the method of claim 13.--

--18. (New) A plurality of amplified target sequences of interest detected according to the method of claim 14.--

REMARKS

By the present Communication, the specification and claims 1-7, 10 and 12 have been amended, and new claims 13-18 have been added to define Applicant's invention with greater particularity. No new matter is introduced by the amendments or new claims abstract. Support for the amendments and new claims is found throughout Applicant's specification and claims as originally filed.

Claims 1-18 are currently under examination.

REJECTIONS UNDER 35 U.S.C. § 112

Claims 4 and 12 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for allegedly failing to point out and distinctly claim the subject matter which Applicant regards as the invention. This rejection is respectfully traversed.